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Project Overview

OpenTelemetry is an open source software that provides a framework for observability by enabling the instrumentation, generation, collection, and export of telemetry data - metrics, logs, and traces.

Has 75 repositories that have a collection of APIs, SDKs and other tools.

Goals and Milestones

Milestone 1: Download, build, and test out the existing OpenTelemetry Project codebase. Understand the codebase and the contributions required to achieve the final goal. Talk to the mentor about any issues and the OpenTelemetry maintainers if necessary.

Milestone 2: Create the necessary PRs for achieving the goal of the project. Resolve at least 2 issues in the opentelemetry-python repository.

Open Source Outcomes

1. Made the code changes required to elevate community support for linux/s390x for the OpenTelemetry Collector from Tier 3 to Tier 2.

1. Compiled and ran the OpenTelemetry Collector on IBM z/OS and created documentation to reproduce the same.

1. Implemented the Events API

1. Created PRs to resolve 7 issues in the OpenTelemetry Python repository.

Highlights and Accomplishments

Elevating community support for linux/s390x for OT Collector

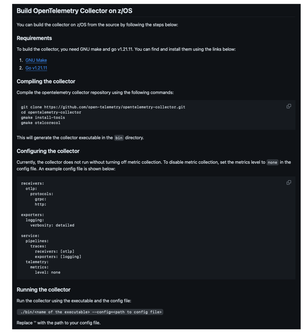
- Required integrating the s390x runner in the CI/CD pipeline.
- However, there is no GitHub hosted runner for s390x, but there is an option of using a self-hosted runner.
- Using a self-hosted runner has security concerns.

```
unittest-matrix:
  strategy:
    matrix:
      runner: [ubuntu-latest, actuated-arm64-4cpu-4gb, <linux_s390x-runner>]
      go-version: ["~1.22", "~1.21.8"] # 1.20 needs quotes otherwise it's interpreted as 1.2
  runs-on: ${{ matrix.runner }}
  needs: [setup-environment]
  steps:
    - name: Set up arkade
      if: ${{ matrix.runner == 'actuated-arm64-4cpu-4gb' }}
      uses: alexellis/setup-arkade@v3
    - name: Install vmmeter
      if: ${{ matrix.runner == 'actuated-arm64-4cpu-4gb' }}
      run: |
        sudo -E arkade oci install ghcr.io/openfaasltd/vmmeter:latest --path /usr/local/bin/
    - name: Run vmmeter
      if: ${{ matrix.runner == 'actuated-arm64-4cpu-4gb' }}
      uses: self-actuated/vmmeter-action@v1
    - name: Checkout Repo
      uses: actions/checkout@b4ffde65f46336ab88eb53be808477a3936bae11 # v4.1.1
```

- GitHub hosted runner is a clean isolated VM created when a job starts and destroyed when it ends which is not the case with self-hosted runners which creates an issue.
- Working to resolve ongoing issue in the repo regarding security problems with self-hosted runner. Pushed code changes in SIG Mainframe repo till the issue is resolved.

Compiling and running OT Collector on z/OS

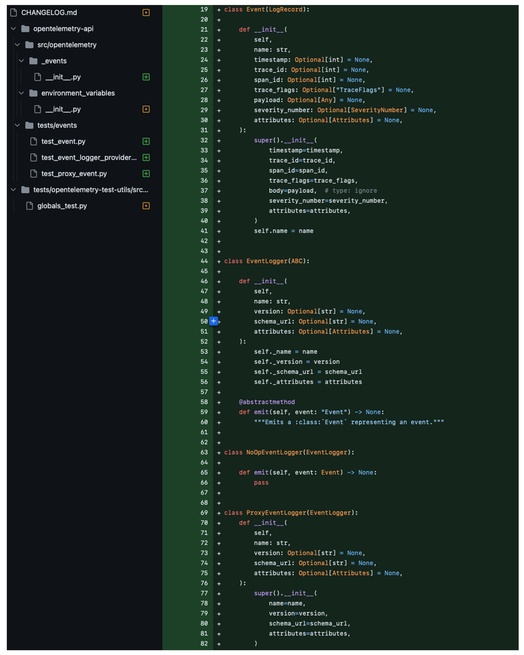
- Involved testing various go versions and modifying the configuration of the Collector.
- “Make” available on z/OS didn’t work as expected so had to use GNU Make from z/OS Open Tools to compile the collector.
- No implementation for metric collection on z/OS.



- Have to turn off metrics in the Collector configuration file to run the Collector on z/OS.

7 Resolved Issues

1. **Implemented the Events API**: There is specification document for the events API but it was not implemented in a lot of repos including the OT Python repo.
2. **_encode_events assumes events.attributes.dropped exists:** attributes in events object was of type Optional[Mapping[str, AttributeValue]] which did not guarantee that it had a dropped attr.
3. **OTLP exporter is encoding invalid span/trace IDs in the logs:** When there is no active trace, the exporter was including span/trace IDs in the protobuf messages which should not have been happening.
4. **Optional scope attribute for tracer/logger creation:** The specification sheet required that when tracers or loggers are created, users should be able to add optional attributes to it.
5. **Confusing error when span name is not a string:** When spans are created and the name passed as a parameter is not a string, it gave “TypeError: bad argument type is not a built-in operation” which does not help the user much in identifying their mistake.
6. Resolved 2 more issues in addition to the ones above.



Future Work

1. Compiling OT Collector Contrib on z/OS - Tried doing this but there were many issues and didn’t have time to resolve it.
2. Elevate community support for OT Collector for linux/s390x to Tier 1 - Involves adding performance tests and some end-to-end tests.